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10/022,289	12/14/2001	Jane A. Blasi	08935-244001 / M-4961	2843

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FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER	
YUAN, DAH WEI D	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/022,289
Filing Date: December 14, 2001
Appellants: Jane A. Blasi, Nikolai N. Issaev, Michael Pozin

Tu Nguyen
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed July 28, 2004.

(1) Real party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellants' statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejections of claims 1-4 and 6-7 stand or fall together, claims 8-15 and 17-18 stand or fall together, claims 5 and 16 stand or fall together as stated in the brief.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

Number	Name	Date
US 6,001,509	Kim et al.	12/99
US 6,174,616	Nimon et al.	12/00
US 6,352,793	Kitoh et al.	03/02

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

(I) Claims 19-21,34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nimon et al. (US 6,165,644), which was described in the final rejection dated February 27, 2004. The rejection is repeated below for convenience.

With respect to claim 19, Nimon et al. teach a lithium battery comprising a positive electrode, a negative electrode and an electrolyte. The positive electrode may be attached to a current collector by directly forming into the current collector or by pressing a preformed electrode onto the current collector. The current collectors are typically sheet of conductive material such as aluminum or stainless steel. Exemplary but optional electrolyte salts for the

battery cells incorporating the electrolytic solvents include lithium trifluoromethanesulfonimide (LiTFSI), lithium triflate, lithium perchlorate, $LiPF_6$, $LiBF_4$ and $LiAsF_6$. Nimon et al. further disclose the lithium battery can be either a primary battery or a rechargeable battery. See Column 7, Lines 46-50; Column 8, Lines 42-46; Column 13, Lines 5-10. However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to combine lithium perchlorate and a lithium salt selected from the group consisting of LiTFS, LiTFSI, and $LIPF_6$. It is prima facie obvious to combine two compositions, each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. In re Kerkhoven, 205 USPQ 1069, 1072.

With respect to claims 20,21, Nimon et al. teach the lithium battery can be a lithium (anode) – manganese oxide (cathode) primary battery. See Column 8, Lines 42-46.

With respect to claims 34-36, Nimon et al. teach the optional electrolyte salts for the battery include lithium trifluoromethanesulfonimide, lithium triflate and lithium hexafluorophosphate ($LiPF_6$). The typical concentration of the lithium salt is 0.5 moles/liter, which is equivalent to 76,000 ppm when $LiPF_6$ is used.

(II) Claims 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nimon et al. (US 6,165,644) in view of Kim et al. (US 6,001,509), which was described in the final rejection dated February 27, 2004. The rejection is repeated below for convenience.

With respect to claims 22-26, Nimon et al. teach the addition of lithium perchlorate to the electrolyte in the primary battery as discussed above. Kim et al. recognize that ionic conductivity of the electrolyte of the battery is determined by the content of the lithium perchlorate in the electrolyte. See Column 4, Lines 25-32. Therefore, it would have been within the skill of the ordinary artisan to fabricate an electrochemical cell of Nimon comprising at least 2500 ppm to less than 20,000 ppm by weight of the lithium perchlorate in the electrolyte, because Kim et al. teach the desired ionic conductivity of the electrolyte can be achieved by modifying the content of lithium perchlorate in the electrolyte. *Discovery of optimum value of result effective variable in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

(III) Claims 31,32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nimon et al. (US 6,165,644) as applied to claims 19-21,34-36 above, and further in view of Kitoh et al. (US 6,352,793 B2), which was described in the final rejection dated February 27, 2004. The rejection is repeated below for convenience.

With respect to claims 31,32, Nimon et al. disclose a primary electrochemical cell as described above in Paragraph (I). However, Nimon et al. do not disclose that the use of aluminum as the case material. Kitoh et al. teach the use of pure aluminum (melting point 660°C) as case for a lithium battery because it has light weight, excellent electron conductivity and good workability. See Column 2, Lines 15-25. Therefore, it would have been obvious to one of ordinary skill in the art to use aluminum case for the lithium battery of Nimon et al.,

because Kitoh et al. teach the use of aluminum battery case because of its light weight and excellent workability.

(11) Response to Argument

Appellant asserts that a person of ordinary skill in the art would not be motivated to use an electrolyte that includes multiple lithium salts selected from Nimon's list of optional electrolyte salts.

Nimon teaches an electrochemical cell comprising a cathode, an anode and an electrolyte containing multiple compounds. Specifically, Nimon et al. teach an electrolyte for use in a lithium battery wherein the electrolyte comprises two lithium salts, i.e., lithium polysulfide (Li_2S_8) and lithium trifluoromethanesulfonimide (LiTFSI). In another embodiment, Nimon et al. disclose the use of lithium polysulfide and lithium triflate ($LiCF_3SO_3$) as the electrolyte. See Column 3, Lines 28-29; Column 12, Lines 15-16. It is evident that the teachings of Nimon describe the use of multiple lithium salts as electrolyte in the battery. Nimon et al. further disclose the optional electrolyte salts for the battery including lithium trifluoromethanesulfonimide, lithium triflate, lithium perchlorate ($LiClO_4$), $LiPF_6$, $LiBF_4$ and $LiAsF_6$. The individual lithium salts in the list are considered functionally equivalent salts that achieve similar effects. Thus, it would have been prima facie obvious, within the meaning of 35 U.S.C. 103, to employ these components in combination for their known functions and to optimize the amount of each additive.

Appellant argues that the instant invention recites the use of lithium perchlorate in the electrolyte. In contrast, Experiment 2 of Nimon only discloses the use of a non-lithium containing perchlorate compound, such as magnesium perchlorate, in the electrolyte.

In Experiment 2 of Nimon reference, it discloses the use of multiple salts, including lithium trifluoromethanesulfonimide, lithium polysulfide and magnesium perchlorate as the electrolyte in a lithium battery. See Column 13, Lines 5-8. It is well known in the battery art that electrolyte means a substance located between an anode and a cathode that is composed of positive and negative ions and is capable of transporting at least one ionic species therethrough. The disclosure of Nimon et al. describes an electrolytic solution comprising lithium ions, trifluoromethanesulfonimide ions and perchlorate ions, which collectively encompass the ionic species as recited in claim 19.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully Submitted,

Dah-Wei D. Yuan
September 2, 2004

Patrick J. Ryan
SPE, Art Unit 1745

Steven P. Griffin
SPE, Art Unit 1731